UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N. W. SUITE 818
ATLANTA, GEORGIA 30303

MAR 13 1975

In Reply Refer To:
IE:II:VLB
50-390/75-3
50-391/75-3

Tennessee Valley Authority
ATTN: Mr. J. E. Watson
Manager of Power
818 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Messrs. V. L. Brownlee, and W. B. Swan of this office on February 19-21, 1975, of activities authorized by NRC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar Nuclear Plant, Units 1 and 2 facilities, and to the discussion of our findings held by Mr. Brownlee with Mr. J. C. Killian and staff at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no items of noncompliance were disclosed.

We have examined actions you have taken with regard to previously reported unresolved items. These are identified in Section IV of the summary of the enclosed report.

One new unresolved item resulted from this inspection and is identified in Section III of the summary of the enclosed report. This item will be examined during subsequent inspections.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you submit a written application to

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this office requesting that such information be withheld from public disclosure. If no proprietary information is identified, a written statement to that effect should be submitted. If an application is submitted, it must fully identify the bases for which information is claimed to be proprietary. The application should be prepared so that information sought to be withheld is incorporated in a separate paper and referenced in the application since the application will be placed in the Public Document Room. Your application, or written statement, should be submitted to us within 20 days. If we are not contacted as specified, the enclosed report and this letter may then be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Very truly yours,

Norman C. Moseley

Norman C. Moseley
Director

Enclosure:
IE Inspection Report No.
50-390/75-3 and 50-391/75-3

cc w/encl:
Mr. J. E. Gilleland
Assistant Manager of Power

Letter to Tennessee Valley Authority from N. C. Moseley
dated MAR 13 1975 and IE Rpt. Nos. 50-390/75-3
and 50-391/75-3

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IE Inspection Report Nos. 50-390/75-3 and 50-391/75-3

Licensee: Tennessee Valley Authority
818 Power Building
Chattanooga, Tennessee 37401

Facility Name: Watts Bar Nuclear Plant Units 1 and 2
Docket Nos.: 50-390 and 50-391
License Nos.: CPPR-91 and CPPR-92
Category: A2/A2

Location: Spring City, Tennessee

Type of License: W PWR, 1160 Mwe

Type of Inspection: Routine, Unannounced, Construction

Dates of Inspection: February 19-21, 1975

Dates of Previous Inspection: January 29-31, 1975

Principal Inspector: V. L. Brownlee, Reactor Inspector
Facilities Section
Facilities Construction Branch

Accompanying Inspectors: W. B. Swan, Reactor Inspector
Engineering Section
Facilities Construction Branch

Other Accompanying Personnel: None

Principal Inspector: V. L. Brownlee 3/12/75
V. L. Brownlee, Reactor Inspector
Facilities Section
Facilities Construction Branch
Date

Reviewed by: J. C. Bryant 3-12-75
J. C. Bryant, Senior Inspector
Facilities Section
Facilities Construction Branch
Date

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SUMMARY OF FINDINGS

I. Enforcement Items

None

II. Licensee Action on Previously Identified Enforcement Matters

None

III. New Unresolved Items

75-3/1 Regulatory Operations Bulletins and Licensee Responses

The following ROB's are identified for specific followup at the Engineering Offices, Knoxville, during a subsequent inspection (See Details I, paragraph 2):

a. ROB 73-1 - "Faulty Overcurrent Trip Delay Device in Circuit Breakers for Engineered Safety Systems"

b. ROB 73-2 - "Malfunction of Containment Purge Supply Valve Switch"

c. ROB 74-1 - "Walworth and Darling Valve Deficiencies"

d. ROB 74-6 - "Defective Westinghouse Type W-2 Control Switch Component"

e. ROB 74-8 - "Deficiency in ITE Molded Case Circuit Breakers, Type HE-3"

f. ROB 74-9 - "Deficiency in General Electric Model 4 KV Magne-Blast Circuit Breakers"

g. ROB 74-11 - "Improper Wiring on Safety Injection Logic"

h. ROB 74-12 - "Incorrect Coils in Westinghouse Type SG Relays"

i. ROB 74-13 - "Improper Factory Wiring on General Electric Motor Control Centers"

j. ROB 74-15 - "Misapplication of Cutler-Hammer Three Position Maintained Switch Model No. 10250T"

IV. Status of Previously Reported Unresolved Items

74-5/1 Valve Wall Thickness Verification Program

TVA (DED) will submit a valve wall thickness program that meets Region II letters of June 30, 1972 and February 16, 1973. This item remains open.

74-6/1 Letter and Analysis Report on Concrete Pour Collapse at Control Building (10 CFR 50.55(e))

TVA submitted their final report on January 15, 1975. The report was reviewed by IE:II regarding problem description, cause, safety implications, damage assessment and the corrective action and plans. The report was found acceptable, site examination confirms implementation of the corrective action and plans. This matter is closed. (Details II, Paragraph 3)

74-7/1 Weld Material Control

TVA will evaluate the CB&I practice of issuing low hydrogen electrodes for a time period of one shift (approximately 10 hours). This item remains open.

74-7/2 TVA Surveillance Procedure (DEC-QCP-4.6, Rev. 0)

The section dealing with instrument calibration will be revised to establish more clearly the criteria under which TVA will request calibration. This item remains open.

74-7/3 Stop Work Authority

The CB&I QA Manual does not provide field QC (Welding Supervisors) with stop work authority. TVA has agreed to pursue this matter with CB&I. This item remains open.

V. Design Changes

None

VI. Unusual Occurrences

None

VII. Other Significant Findings

None

VIII. Management Interview

The inspectors met with J. C. Killian, Project Manager; members of the site staff; and QA representatives of DED, Knoxville. The licensee was apprised of the areas inspected and findings relative to the following: QA/QC program for concreting operations, containment vessel erection, and mechanical equipment storage; site training activities; site QA Unit audit functions; resolution to previously identified unresolved item 74-6/1, identified in Section IV above; and to the new unresolved items identified in Section III above.

DETAILS I

Prepared by: V L Brownlee 3/4/75
V. L. Brownlee, Reactor Inspector Date
Facilities Section
Facilities Construction Branch

Dates of Inspection: February 19-21, 1975

Reviewed by: J C Bryant 3/4/75
J. C. Bryant, Senior Inspector Date
Facilities Section
Facilities Construction Branch

All information in Details I applies equally to Units 1 and 2 except where information is identified with a specific reactor.

1. Individuals Contacted

Tennessee Valley Authority (TVA)

J. C. Killian - Project Manager
T. B. Northern - Construction Engineer
L. C. Northard - Supervisor, Site QA Unit
L. J. Johnson - Mechanical Engineer
J. M. Lamb - Supervisor, Mechanical Engineering Unit
J. R. Inger - QA Engineer
H. G. McFarland - QA Engineer
B. D. Varga - Site Training Officer
T. Y. Abbatiello - DED-QA
R. W. Dibeler - DEC-QA

2. Regulatory Operations Bulletins (ROB) and Licensee Responses

The following ROB items are addressed in this report to more clearly define or verify the implementation of TVA's corrective actions and plans as identified in the specific letters of response. These matters will be considered unresolved items until it is confirmed that TVA has implemented corrective measures that provide assurance that the problem is not applicable to the facilities or that corrective measures have been implemented to assure that the problem will be detected and corrected.

a. ROB 73-1 - "Faulty Overcurrent Trip Delay Device in Circuit Breakers for Engineered Safety Systems"

TVA's letter of response, April 4, 1973, identifies that no safety-related (class IE) circuit breakers have been purchased and that due regard will be given in the purchase specification; however, should any W type DB circuit breakers be supplied an identical site program to that proposed for Sequoyah will be implemented.

Both site and QA engineers agreed that this matter would be examined and either resolved or corrective actions and plans will be developed and implemented to provide assurance that the problem will be identified and corrected.

b. ROB 73-2 - "Malfunction of Containment Purge Supply Valve Switch"

TVA's letter of response, August 22, 1973, identifies the facilities as utilizing a design of the control circuits for the containment ventilation system isolation valves which duplicates the design used for the Sequoyah plant. The control circuits are reported to be electrically independent of each valve and each valve is controlled by a separate switch.

The engineers agreed to confirm that the design is far enough along to determine if the control is similar to Sequoyah and does provide the electrical independence and separate switch.

c. ROB 74-1 - "Walworth and Darling Valve Deficiencies"

TVA's letter of response, April 15, 1974, identifies that there are no Walworth or Darling valves similar to those mentioned in the ROB scheduled to be installed in the facilities.

The engineers agreed to confirm that the present valve lists do not include these type valves.

d. ROB 74-6 - "Defective Westinghouse Type W-2 Control Switch Component"

TVA's letter of response, September 18, 1974, identifies that switches and repair kits shipped directly from W to the site will be inspected prior to shipment and that switches and repair kits supplied from other sources will be inspected upon receipt at the site and the inspection will be documented.

The engineers agreed to examine this matter and confirm that the W supplied equipment is to be inspected and documented and that a site program will be developed and implemented if applicable.

e. ROB 74-8 - "Deficiency in ITE Molded Case Circuit Breakers, Type HE-3"

TVA's letter of response, August 21, 1974, identifies that no ITE molded case circuit breakers, Type HE-3, are used in class IE systems.

The engineers agreed to confirm that this is still the position.

f. ROB 74-9 - "Deficiency in General Electric Model 4KV Magne-Blast Circuit Breakers"

TVA's letter of response, September 20, 1974, identifies that there are no circuit breakers of the type identified on order or received at the site. The letter identifies that General Electric M36 switchgear is on order for Watts Bar and TVA has requested that GE determine if the deficiency exists on the circuit breakers being supplied on this contract, and if so be corrected prior to shipment to site.

The engineer agreed to confirm that the type switchgear remains the same as identified and that the type problem is not applicable to that type switchgear or if applicable the matter be corrected and documented.

g. ROB 74-11 - "Improper Wiring on Safety Injection Logic"

The bulletin did not require a written response from the licensee. The inspector asked if TVA had taken any initiative to determine if the problem was applicable. No information on this matter was available at the site; therefore, the inspector requested that TVA examine this matter and determine applicability to site and if applicable develop and implement corrective measures that would correct, inspect, test and document the modification.

The engineers agreed to pursue the matter.

h. ROB 74-12 - "Incorrect Coils in Westinghouse Type SG Relays"

TVA's letter of response, November 25, 1974, identifies that the potential for similar circumstances exist. The letter further states that all suppliers are being sent a copy of the bulletin with instructions to inspect for this deficiency prior to shipment. The inspection is to be documented and included in the QA records.

The engineers agreed that this matter would be followedup and confirmed that the suppliers have been notified.

i. ROB 74-13 - "Improper Factory Wiring on General Electric Motor Control Centers"

TVA's letter of response, December 24, 1974, identifies that no motor control centers of the type described have been utilized as class IE equipment.

The inspector agreed with the engineers that this specific matter appears to be resolved relative to the site; however, the problem is really one of improper wiring practices. The inspector commented that TVA may want to consider this matter with regard to receipt of other MCC and switchgear equipment and possibly the inclusion of such matters into the site training program.

The engineers agreed to consider the matter.

j. ROB 74-15 - "Misapplication of Cutler-Hammer Three Position Maintained Switch Model No. 10250T"

TVA's letter of response, January 6, 1974, identifies that some of the described switches may be utilized in safety-related circuits. TVA will submit a more comprehensive report by March 3, 1975.

The engineers agreed to followup on this matter.

k. ROB 74-16 - "Improper Machining of Pistons In Colt Industries (Fairbanks-Morse) Diesel Generators"

TVA's letter of response, January 2, 1975, identifies that the site diesel-generators in question are equipped with General Motors engines.

A telecon to the supplier during this site inspection confirmed the diesel engine supplier as being General Motors.

This matter is considered resolved.

3. Site QA Unit-Audit

The site audit program is delineated in QA procedure DEC-QAP-1.0, "Auditing Construction Activities." The procedure applies to the auditing of DEC (internal) and contracting and/or service organizations at the construction site. The site audit schedule is prepared on a three month basis. Audits are performed in accordance with DEC-

QAP-1.0 and to the requirements of the specific QC procedure and discipline being audited. Audit reports are written and distributed to management. The site QA unit submits to the Chief, DEC-QA Staff, a QA monthly activities report.

Review of past and present audit schedules; selected (5) audit reports; the February 5, 1975, monthly report; and discussions with the QA engineers indicate that the requirements of QAP-1.0 are being implemented and the scope of present audit functions is commensurate with the present construction schedule.

4. Mechanical Equipment

The inspector examined the receipt and storage of Units 1 and 2 reactor vessels and heads and Unit 1 upper and lower internals with supporting documentation.

The storage and maintenance sheets have been initiated and storage inspections started. Storage has been provided in accordance with established requirements. Cleanliness requirements for inspection personnel has been established. Due to the cladding problems found on the Sequoyah vessels, W has requested that the initial internal inspections of the reactor vessels and internals be deferred until RDM personnel are present. The anticipated date of internal inspection is March 5, 1975.

Discussions with site engineers, review of documents and records, and examination of physical storage confirms that the requirements of DEC-QCP-4.5, "Handling, Storage, and Maintenance of Permanent Mechanical Equipment," with certain documented exceptions, are being implemented.

5. Site Training

TVA has implemented both a quality achiever (crafts) and quality verifier (QA/QC inspection and testing personnel) onsite training program.

The craft training program is not a part of the DEC-QA Training Program for the indoctrination and formal training of DEC site personnel in QA/QC requirements (inspection, testing, and qualification/certification programs). However, after discussions with the training officer, project manager, construction engineer, supervisor of the QA unit and other engineers it appears that this site training program is achieving its purpose of increasing the quality of product through better knowledge and understanding of the QA/QC requirements and quality workmanship standards.

DEC-QCP-1.11, dated August 14, 1974, defines the system for indoctrination and formal training of DEC site personnel in QA/QC requirements. Training of QA personnel and examinations for qualification and certification of NDE personnel is the responsibility of the QA Unit. Discussions with unit supervisors and review of selected records and interoffice correspondence indicate that the formal training of DEC site personnel is being implemented.

The inspector discussed with site management that, as written, DEC-QCP-1.11 procedure did not accurately describe the present site QA training program. Management explained that due to recent organizational/functional alignment changes, and considering the recent QCP date of issue, plus currently scheduled QA meetings which are to resolve several of the issues, it would be reasonable to assume that a revised QCP would be issued within the near future that would resolve present shortcomings.

The inspector informed management that this matter would be included within the scope of future inspections.

DETAILS II

Prepared by: W. B. Swan 3/11/75
W. B. Swan, Reactor Inspector
Engineering Section
Facilities Construction Branch
Date

Dates of Inspection: February 19-21, 1975

Reviewed by: L. L. Beratan 3-12-75
L. L. Beratan, Senior Inspector
Engineering Section
Facilities Construction Branch
Date

All information in Details II applies equally to Units 1 and 2 except when identified with a specific reactor.

1. Individuals Contacted

Tennessee Valley Authority (TVA)

a. Site

J. C. Killian - Project Manager
T. B. Northern - Construction Engineer
L. C. Northard - Supervisor, Site QA Unit
J. M. Lamb - Supervisor, Mechanical Engineering Unit
H. S. Shepperd - Supervisor, Civil Engineering Unit
R. L. Heatherly - Supervisor, QC and Records Unit
J. C. Cofield - Supervisor, Materials Engineering Unit
J. E. Daniel - Civil Engineer
J. A. Morgan - Mechanical Engineer, Welding and NDE
K. A. Hasting - Construction Engineering Associate, NDE
B. J. Majors - Construction Engineering Associate, Welding

b. Knoxville

D. DeFord - DED Engineering QA Supervisor

2. Concrete Placement for Containment Buildings of Units 1 and 2

A followup inspection was made of the concrete program. This involved a QC records review, inspection of completed work, observation of preparations for placement of a shield wall lift for Unit 2 containment building and for miscellaneous placements in the auxiliary building complex and the control building, and observation of concrete placement in the auxiliary building. A visual inspection was made of the concrete laboratory and aggregate storage yard.

Approximately 70 percent of concrete needed for the powerhouse complex had already been placed. The shield wall concrete for Unit 1 had been raised to elevation 762 and then discontinued until the major portion of the heavy interior structural work is finished. Installation of the containment liner had been delayed by an extended strike in CB&I's Birmingham shops so the licensee estimated that shield wall placement for Unit 1 would not resume for six months.

Placement of the second lift in the Unit 2 shield wall to elevation 712 was scheduled for the night shift of February 21, 1975.

No deficiency was noted during observations of preparations for placement or in the placements.

Prior to the inspection all anchor bolts for the Unit 2 containment vessel had been installed and the base slab for the reactor building had been placed to elevation 699 ready for installation of the containment vessel base.

The QC records for acceptance testing of concrete components, mixes and cylinders were sampled. These individual records and the February "Monthly Concrete Quality Control Report," reflect tight control of concrete quality.

3. Previously Unresolved Item 74-6/1 - Concrete Pour Collapse at Control Building

TVA's final report on this incident dated January 15, 1975, was reviewed. The report and the backup file contains comprehensive details on the incident, the cause and corrective action. The file also contains engineering plans and instructions to prevent similar incidents.

Concrete placement in the control building roof has been completed. The placed concrete in the area of the collapse and throughout the control building was examined and found to be acceptable. This matter is closed.

4. Containment Vessels, Units 1 and 2

These vessels are to be free standing steel structures, anchored to the reactor building base and shielded by an external reinforced concrete structure.

An inspection was made of completed work and work in progress. CB&I had performed approximately 65 percent of the work of installing the base liner for Unit 1 and were engaged in welding the leak chase channels over the liner butt welds. The approved NDE procedures did not include a pressurized halogen gas leak test of the channels. TVA representatives stated that DED will be asked to consider the advisability of adding a pressurized leak test using a halogen gas for the base liner leak chases. CB&I was fitting the final liner sheet in the reactor pit in the base of Unit 2. One welder was making a vertical wall seam weld in the pit. His work and cleaning of the edges of the last plate prior to its fitting onto the sloped pit wall were observed. No deficiency was noted.

TVA Procedure DEC-QCP-4.6 RO, "Surveillance of Field Erection of Containment Erection and Contractor's Quality Assurance Program," has Attachment A, Weekly Surveillance Report. Completed reports on this form and the daily reports of the TVA mechanical engineering welding and NDE group were sampled.

TVA Quality Assurance Audit Report No. WB-5-74-01 prepared by the site QA unit covered an audit of CB&I's field operations and QA program. The auditor had found that there was no approved procedure for making miter welds on the leak chases on Unit 1 floor plate. Welding of this type joint was stopped and completed welds were cut out. A "Condition Adverse to Quality Report," was prepared by TVA. No other deficiency was reported for this audit.

CB&I's Nuclear Quality Assurance Handbook, Watts Bar Containments, had been revised through January 13, 1975. Sections applicable to this inspection were reviewed.

At the CB&I office trailer, the quality control records system was reviewed. From field notes and working logs work progress and inspection data are noted on a working copy of CB&I Record Drawing R-8, Rev. 1. Later a final as-built copy of the drawing is prepared. The drawing consists of a tabulation of twelve information categories recording weld number, welder, NDE personnel for tests and test results. The right half of the drawing maps a section of the containment liner and identifies each weld. Two joints were selected and the records, including log notes, were traced.

This review of TVA engineering and CB&I QC documents together with review of the applicable procedures and the TVA QA unit's audit report show that the QA QC program for the containment vessels was adequate for the status of work progress at the time of the inspection.